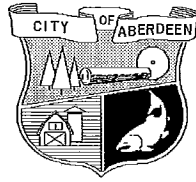


Appendix H – Condition S8 & S9.E.4 of NPDES Phase II Permit

City of
Aberdeen



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Public Works and Utilities Department Stormwater Program

Monitoring Proposal in Accordance with
Condition S8 of the
Phase II Permit

NPDES Monitoring Proposal to Meet condition S8 of the Phase II Municipal Permit Background

This document has been prepared to meet NPDES Permit Condition S8C1a Stormwater Outfall Monitoring and S8C1b Stormwater Management Plan Effectiveness Monitoring.

Permit Condition S8C1a requires outfall monitoring based on population. The City of Aberdeen has a population of approximately 17,000, and is therefore required to identify two outfalls where stormwater sampling can be conducted. One outfall is required to represent a commercial land use. The other outfall must represent a high density residential land use, defined as 4 units per acre, or greater. These outfalls must be selected based on a known water quality problem or an area of interest for future monitoring.

Condition S8C1b requires the City to conduct monitoring to determine the effectiveness of a targeted action within the Stormwater Management Plan (SWMP), or to determine whether the SWMP is achieving a targeted environmental outcome.

In order to reduce the cost of the monitoring studies, the City is proposing to select two outfalls that have known water quality issues, and perform both the outfall and monitoring at each outfall site.

Challenges in Meeting Permit Monitoring Location Requirements

The permit conditions require that our monitoring target either an area with known water quality problems or an area of interest for future monitoring. The City of Aberdeen has over 50 separate stormwater discharge points to waters of the US. The City has not performed water quality testing at any of the stormwater discharge points therefore it is not possible to designate a point with known water quality problems.

Because much of the community is relatively flat and many of the drainage basins are interconnected by piping, during peak flow conditions the direction of flow in some areas are

dependant upon the tide elevation and which pumps are running. This condition was considered in selecting the basins to be monitored so that any pollutant leaving the basin would be going through the monitoring location.

Since there are no identified problem areas, the City will be selecting two fairly large areas that would be considered representative of the commercial high density areas in our community. Areas will be selected which only have water flows which originate from the area being monitored. Many of the other drainage areas also contain flows that are originating from outside the developed portion of the City making it more difficult to determine the source of any identified pollutants.

H Street Drainage Area

Land use in the H Street Drainage Area consists primarily of commercial, institutional, and apartments. The drainage area is approximately 59 acres that drains to the Chehalis River. Other than the parking lot for the high school there are no special water quality treatment facilities in the drainage area. The monitoring point will be at the H Street pump station manhole. There are no other flows to the outfall downstream of the pump station. The actual outfall is located in the river and access to it is very difficult and is available only at low tides. The proposed monitoring location and associated drainage area is shown on exhibit A. Monitoring will be performed on a monthly grab sample basis. The hydraulics of the sample location are complicated and will require coordination between rainfall events and tides in order to get a representative sample. The hydraulic capacity of the outfall is determined by the elevation of the water in the river. The river water level is subject to a typical 8 foot tidal variation. Water will gravity flow to the river during normal high tide but at extreme high tides the water level in the river is above the ground level of some areas in the drainage area. Tide gates prevent water from the river backflowing into the drainage system. It is during those times that the pump is utilized. Also, even during normal high tide cycles the hydraulic capacity is reduced to the point that the pump is needed for the area to drain because flows exceed the hydraulic capacity of the lines. Because water quality can be affected by how long the water is detained in the pipe system, (ie: sediments can drop out and then resuspend when the system starts moving water) and the background flow in the system

is small, sampling will only be performed when there is enough rainfall to create a stormwater flow in the system. The City will test for the following parameters; ph, turbidity, and fecal coliforms. There will also be a visual inspection for oils. The City will maintain rainfall records at the treatment plant for comparison of water quality and rainfall events. A grab sample of the Chehalis River within 200 feet of the outfall will also be taken. It is not felt that a downstream and upstream sample is warranted as the discharge is a very small portion of the total flow in the river and which direction is actually “upstream & downstream” changes constantly with the tide.

Arthur Street Drainage Area

Land use in the Arthur Street Drainage Area consists primarily of high density residential development. The drainage area is approximately 64 acres that drains to the Wishkah River. There are no special water quality treatment facilities in the drainage area. The sampling point will be at the Arthur Street pump station manhole. There are no other flows to the outfall downstream of the pump station. The actual outfall is located in the river and access to it is very difficult and is available only at low tides. The hydraulic characteristics are similar to H Street Drainage Area as it relates to flows being influenced by tides and pumping. Therefore all the same monitoring protocol will be applied at this location as the H Street monitoring site. The proposed monitoring location and associated drainage area is shown on exhibit B.

Program Effectiveness Study for Monitoring Sites

In Aberdeen's situation it is impractical to perform monitoring to determine if any particular program is having an impact on water quality improvement because there is no background data. Background data is needed to determine whether or not there is a problem and if there is, how big a problem it is. The most cost effective thing we felt could be done to improve water quality would be a stepped up program of street sweeping and catch basin cleaning. The City has already implemented these programs and have cleaned all catch basins throughout the City in the last couple of years and have stepped up street sweeping efforts. Because we have already taken these steps without any previous monitoring it would not be possible to determine the effectiveness by monitoring.

The only effectiveness we will be able to extrapolate will be to compare our monitoring data from our sites with values that would be typical stormwater values for similar sites elsewhere. We do feel that there is merit in performing the monitoring because it will allow us to establish typical base line data that can be applied to other sites that would be monitored in the future in Aberdeen. Also if the monitoring uncovers special problems then the frequency of monitoring can be adjusted and monitored at multiple points within the basin can be performed to determine if the problem is of a general nature or site specific.

One parameter of concern will be fecal coliforms as that would be an indication of potential illicit discharge. Both basins originally had some combined storm and sanitary sewer lines and there were also some sanitary / storm cross connections that diverted sanitary sewage to the stormwater system during high rainfall events. We believe all those various problems have been resolved but this monitoring program can help verify that assumption.

It will be difficult to determine the effectiveness of any stormwater improvements that are related to new residential development. There has been only one new subdivision developed in the last 10 plus years. The population has been on the decline for decades. We feel that is stabilized but no significant residential growth is expected in the next five years, so impacts related to new residential growth can't be monitored.

The City will reevaluate our goals and potential for measuring effectiveness of programs after we have obtained at least a year of data at the monitoring locations.

City of Aberdeen Preparations for Future Monitoring

The City has legal access to the two monitoring locations. Sampling will be performed by City Staff. The stormwater supervisor also holds a Group I Wastewater Certificate and is familiar with sampling protocols. The City of Aberdeen has a certified lab at the Sewer Treatment Plant which can assist in sample analysis. The City will take the steps necessary to begin the monitoring at the two locations beginning of October 2011.

EXHIBIT A

1" = 400'



Washakie River

H Street

Drainage Area

Pump

Station

Monitoring

Location

Charles River

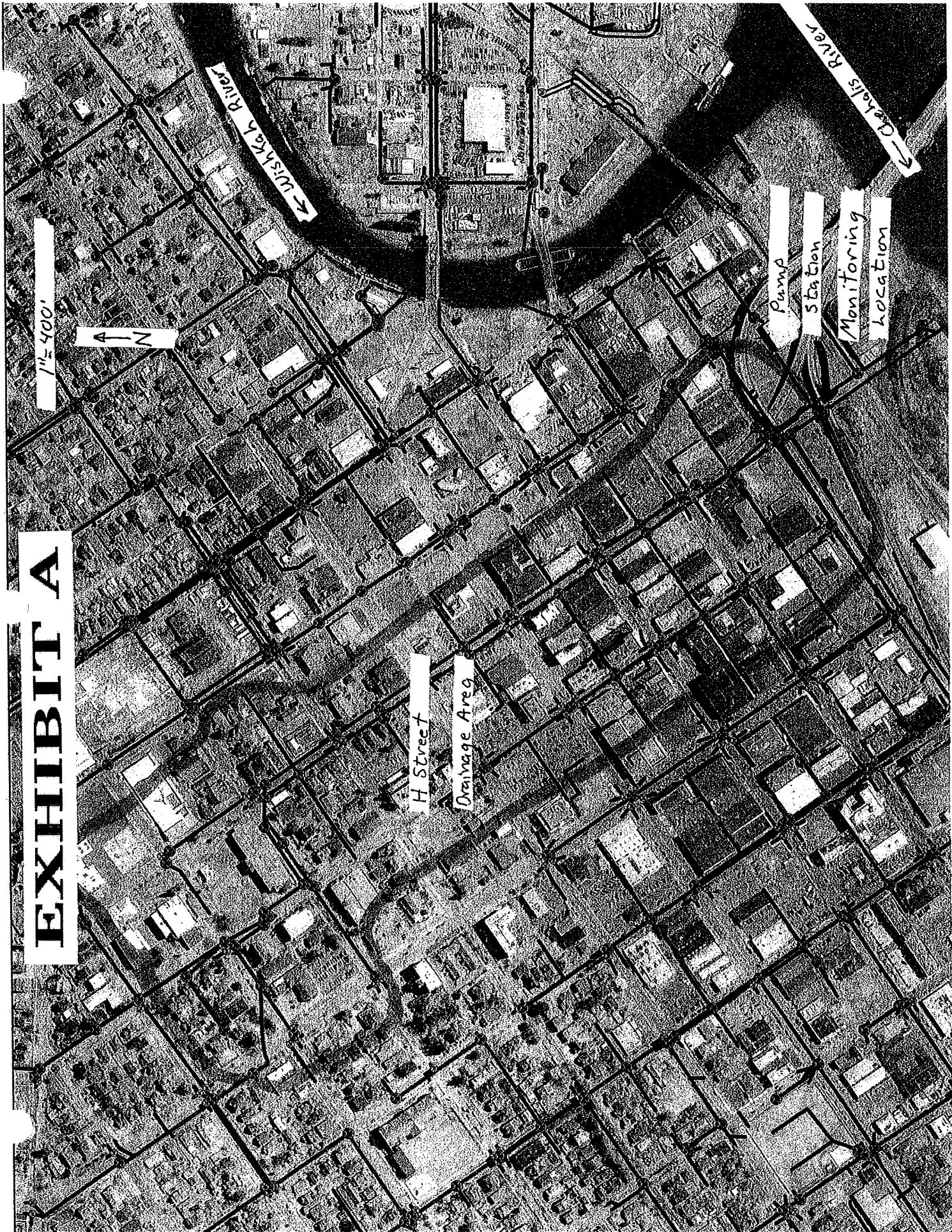


EXHIBIT B

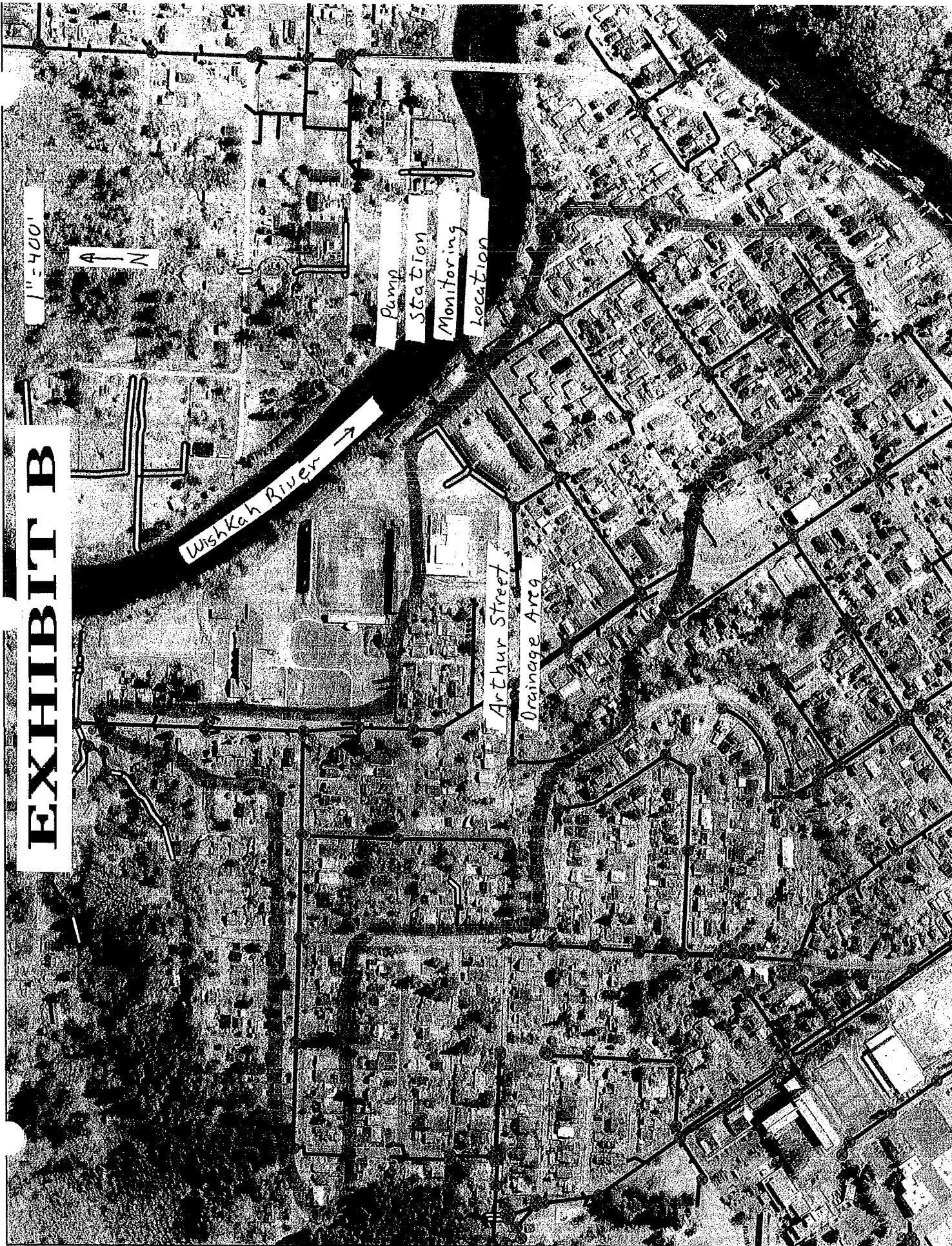
1"=400'



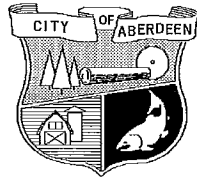
Wishkah River →

Pump
Station
Monitoring
Location

Arthur Street
Drainage Area



City of
Aberdeen



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Public Works and Utilities Department Stormwater Program

Barriers to Low Impact Development
Implementation in Accordance with
Condition S9.E.4 of the
Phase II Permit

June 8, 2011

This report is written to address NPDES Phase II Municipal Permit Requirement S9.E.4.

Summary of barriers to the Use of Low Impact Development Techniques within the City of Aberdeen Permit Area.

- Soil types in the Aberdeen area are generally defined by the USDA as Ocosta. This type of soil is nearly flat, very deep and poorly drained. Soil on upper northern portion of the City is Zen Ker – Elochoman. These soils are better drained but are very steep and overlay siltstone which limits ability to infiltrate water.
- Groundwater migration, especially near hillsides or bluffs is a large concern. Saturation of hillsides has lead to slope failures during major storm events.
- Resistance and lack of understanding from local developers and engineers. Local developers are reluctant to try unfamiliar techniques.
- Resistance from the City operations division. City crews are familiar with cleaning pipes and structures. They are concerned about maintaining landscaping and vegetation as a stormwater facility. Costs for maintenance and life cycle costs are uncertain. The City has no resources to increase maintenance cost.
- Resistance from other City departments. City staff is concerned about aesthetics around open ditches, as well as having residents fill them in and park in them. City engineers have concerns about the potential failure of permeable pavements in high traffic/ high loading areas.
- Resistance from City residents. City residents are concerned more with flooding than any other stormwater issue. Because of topography and soils that have low permeability the water needs to be moved off site rapidly to avoid localized flooding. Because of the Harbor location down stream flood issues are not usually relevant.
- Cost. The cost of redeveloping existing areas cannot be met with existing funding sources.

Availability of LID Practices

All LID practices will be available within the City and can be implemented within this Permit term. Changes to our stormwater ordinance which accommodates the use of all LID practices has been drafted by the City attorney and is scheduled for passage soon.

Planned LID or Non Structural Actions

The City has no new planned LID or Non Structural Actions scheduled, however the City completed two projects last year that enhanced water quality runoff from much of City area that drains to Fry Creek and Mill Creek. Two large ponds, one that acts as a wet pond and one that functions as a wetland were installed at the end of the major west end stormdrain, collects sediments prior to its discharge to Fry Creek. On the south side of town the City constructed a couple of large bioswales that detain stormwater prior to discharge to the Mill Creek area.

Planned Schedules to Require LID Techniques

At this time, the City is not planning to require LID in either public or private development projects. We encourage LID.

It is our understanding that the Department of Ecology will likely require LID use on future development projects the next Permit term. The City will implement this policy to the extent that it is deemed practical for our conditions.

11 - 02

ORDINANCE NO. 6526

AN ORDINANCE RELATING TO LOW IMPACT DEVELOPMENT APPROACHES TO STORM AND SURFACE WATER MANAGEMENT, AMENDING SECTIONS 13.70.020 AND 13.70.130 OF THE ABERDEEN MUNICIPAL CODE AND AMENDING ORDINANCE 6503.

WHEREAS, the city's storm and surface water management code must be amended to allow Low Impact Development Approaches (LIDA) as an alternative to the structural standards in the Stormwater Management Manual for Western Washington; **NOW, THEREFORE**,

BE IT ORDAINED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF ABERDEEN:

SECTION 1. CODE SECTION AMENDED. Ordinance 6503, Section 2, in part, codified as AMC 13.70.020X (Definitions), is hereby amended to read as follows:

"Storm and surface water management" means:

1. For quantitative control, a system of vegetative and structural measures that control the increased volume and rate of surface runoff caused by manmade changes to the land; and
2. For qualitative control, a system of vegetative, structural and other measures that reduce or eliminate pollutants that might otherwise be carried by surface runoff.
3. For "Low Impact Development Approaches (LIDA)" combining quantitative and qualitative controls, a stormwater management and land development strategy applied at the parcel and subdivision scale that aims to mimic natural hydrology and processes by using smallscale, decentralized practices that infiltrate, evaporate, and transpire rainwater. LIDA should: minimize impervious surfaces; disconnect hydrologic elements (roofs, downspouts, parking areas); maintain/increase flow paths and times; and utilize decentralized treatment practices.

SECTION 2. CODE SECTION AMENDED. Ordinance 6503, Section 2, in part, codified as AMC 13.70.130 (Minimum control and management requirements), is hereby amended to read as follows:

The minimum storm and surface water control and management requirements shall be in accordance with standards adopted by the city and included in the Stormwater Management


City
of
Aberdeen

Manual for Western Washington. Low Impact Development Approaches (LIDA) may be substituted for structural standards in the Stormwater Management Manual where the LIDA is developed by a licensed professional in accordance with accepted industry practices.

SECTION 3. PUBLICATION BY SUMMARY. The Finance Director is authorized and directed to publish the attached summary in lieu of this ordinance.


SECTION 4. EFFECTIVE DATE. This ordinance shall take effect immediately upon its passage, signing, and publication.

PASSED and APPROVED this 25th day of January, 2012.



Bill Simpson, Mayor

ATTESTED:



Kathryn Skolrood, Finance Director